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ABSTRACT

Papers on library history and library theory and research presented at the 1986 International Federation of Library Associations (IFLA) conference include: (1) "The History of Western Literature Library Collections in Japan" (Yoshitomi Okazaki, Japan); (2) "Trends of Library History Research in Japan" (Hiroshi Kawai, Yukio Fujino, Atsushi Ishii, and Yoshitaka Kawasaki, Japan); (3) "Impact of the Information Society on the Library" (Yoneji Masuda, Japan); (4) "The Impact of Information Society on Libraries in Japan--Its Emblematic Appearance" (Nobutaka Sakurai, Japan); (5) "Libraries for Scientific Research in China" (Peng Feizhang, China); (6) "Strategic Planning for Information in the Research University--A Report on a Project and Its Implications for Library Education" (Robert M. Hayes, United States); (7) "Library Science in the 21st Century" (Tomoo Matsuda, Japan); (8) "The Tri-Dimensional Nature of Information Work" (Rosario Gassol de Horowitz, Venezuela); and (9) "Research in Library and Information Science in India" (P. B. Mangla). (KM)

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The History of Western Literature Library Collections in Japan

by

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The History of Western Literature Library Collections in Japan

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I. Western Learning in Meiji Period

Historically, until the Tokugawa period, Japan was culturally influenced by European countries from the following three events. The first event, the Portuguese, the first Europeans, landed on the of island Tane in 1543. The second event, Saint Francis Xavier, missionary to the Orient, sailed for Kagoshima in 1549. The third, the Dutch boat "Liefde" was cast away on the coast of Bungo in 1600. After that the Dutch Trade House opened at Hirado and continued commercial relations with Japan exclusively. The Tokugawa Shogunate, shortly after closed its door to foreign countries except with Dutch trade. The Sakoku was the period of Japanese isolation beginning in 1639 lasting until 1853. The same year, Matthew Calbraith Perry from the U.S. came to Uraga. The Shogunate system itself terminated with the fifteenth in line. In 1616 Tokugawa Iyeyasu, the first Shogunate gave strict orders to prohibit the Christian religion. In 1630, it gave other orders prohibiting the importing of foreign books on Christianity. Communication with Dutch people in Nagasaki had been done through a few interpreters. They were hereditary professional government officials.

Shogun Yoshimune, the Eighth, was interested in European culture and he recognized the importance of Dutch knowledge. He relaxed the restrictions except for books on religion. These studies in Dutch were supported by low-ranking samurai primarily

from curiosity, and because of their low economic status no collections were developed. This resulted in almost no collections of books in European languages. Up to this time most academic works were Chinese in origin, and it might be said that wisdom could only be obtained by reading Chinese.1) The library of the Tokugawa family (Momijiyama-bunko) grew from 40,000 volumes in the early period of the 1710's to 113,950 volumes in 1864. Of the collection, 65 percent were Chinese books and only 15 percent were Japanese. This indicated the extent of the Chinese influence on the Shogunate and the academic trends in the Edo era.

In 1771, Ontleedundige Tafelen, by Johan Adam Kulmus, 1734 was translated into Japanese by Sugita Genpaku and his colleagues. It is generally said that this was the dawn of serious study of Western learning. In 1856, the Bakufu (Japan's feudal Government) established the first large scale school of Western studies, the Bansho-shirabe-sho--the Office for the Inspection of Foreign Books. To that curriculum not only Dutch language but English was added in 1860, French in 1861, and the next year German. Military tactics and navigation were emphasized in the curriculum. The Office expanded to Tokyo Kaisei Gakko (school) in 1873, the predecessor of Tokyo University. The collection of Kaisei Gakko by 1876 consisted of 38,678 volumes and in this year most of the Dutch books were transferred to Tokyo Library, the forerunner of NDL (The National Diet Library).2)

In 1868 Tokugawa Yoshinobu, the last of the Japanese Shoguns, surrendered his power to the Emperor, initiating the Meiji Restoration. Immediately after that the Japanese Ministry of

Education was founded in 1871 and issued the Educational Code of 1872. There were many important efforts by foreign visitors to reform the social and educational systems. Mori Arinori(1847-1889), the first Minister of Education was so eager for rapid modernization that he seriously consulted with W.G. Whitney of Yale on the adoption of English as the Japanese language in 1872. Fortunately Whitney's answer was negative. 3)

The Government established Tokyo University in 1877,the first modern European style university. At the beginning lectures in the university were made by foreign visiting scholars in English with texts in European languages. In the middle of 1890's newly trained Japanese professors gradually took over almost all the lectures from visiting professors. Another notable change at that time was the increasing number of books published in Japanese as translations from European languages. 4)

The Government began to make the imperial universities the highest position of learning in all important fields and to concentrate in it all functions relating to the training of leaders of all kinds. In addition to Tokyo (Imperial) University, the Government established other four imperial universities form 1897 until 1918. These leading national universities had a high percentage of European books in their library holdings. This illustrated the Government's eagerness to absorb European culture. In the Tokyo University library, 66 percent of its holdings consisted of European books in 1883. For the other four university libraries the range was from 53 to 58 percent in their early stages.5)

In 1980, most university library holdings increased around hundred or more times. Still European works constitute from 33.3 to 37.9% of the holdings, and especially in larger national university libraries ranked A (with 8 more departments) the range is as much as 45 percent.6)

Japan has finished her modernization in a comparatively short time in history. One reason that made this possible was that the literacy rate itself was comparable to that of most Western countries of the period. It is said that Japan is different chiefly in having been much better prepared for industrialization than any of her Asian neighbors. A more telling difference is that the native language is spoken uniformly in Japan, in contrast to some other developing Asian countries where English is spoken in higher education apart from the native language. "Japanese spirit with Chinese learning " became "Japanese spirit with Western learning" in this period.

II. Collection building after WWI

The next distinguished period of collection building in Western languages came after World War I. It is well known that in the 1920's many excellent private collections moved from Europe to Japan and the U.S. Disturbances in Europe prompted Japan's need to be industrially independent from the U.S. and European countries. Even though Japan was isolated from Europe, the amount of exports to China and South Asian countries more than tripled between 1914 and 1919.7) Japan also experienced the social upheaval sweeping over many nations, still it was a period which marked her advancement on the world stage and the develop-

ment of her capitalistic economic system. Another remarkable event was the reform of colleges and universities initiated in 1918. The Government issued a body of regulations known as the University Order and Higher School Order on the recommendation of the extraordinary Education Council. In this year, private universities and colleges claiming long history were given legal status. The number of universities and colleges had increased in 1930 to 46. The enrollment in 1925 was already double that of 1915. The economic growth of this period enabled many Japanese scholars to stay abroad in European countries especially in Germany. These scholars not only became expert in their own fields, but also achieved critical expertise in academic literature as well. The post WWI inflation brought many excellent collections, built by university professors, to the market place. While some of these were sold outside of Europe, many were sold to Japanese scholars who lived in Europe at that time. Many of these scholars built their own collections and also assisted their own universities in Japan to build their libraries. It is difficult to say whether each university library had formal plan or policy for collection building but it is clear that they were not concerned about duplications. Here we could make several generalizations about the collections imported in this period. 1. The most remarkable collections were built by professors in European countries as their private collections. Those professors actively collected from the later part of the 19th Century to the beginning of the 20th Century, especially in Germany. 2. The collections were coherent and consisted of well selected monographs in the field of social sciences particularly

economics and law. The collections on labor and labor class problems were imported as a reflection on the rapid progress of Japan's capitalism. Many of those are kept as special collections in the university libraries and a directory of special collections edited by NDL 8) gives us concise information about those. The directory contains around 150 collections including more than 1,000 volumes in European languages, and 40 percent of those collections, or their nucleus, were built by European scholars. Following are some notable collections belonging to the category above. (It is important to note that there are around 70 collections including 1,500 volumes in European languages assembled by Japanese scholars in the list of NDL located in university libraries.) For examples: Karl Bücher, Lujo Brentano, Paul Eltzbacher, W. Hasbach, Georg von Mayr, Carl Menger, Gustave Schelle, and Werner Sombart collections on economics.= Otto Friedrich von Gierke, Julius Hatschek, Felix Lieberman, Hugo Preuss, Emil Seckel, Friedrich Stein, Ernst Zitelmann, Friedrich Thaner,and Andreas von Thur collections on law. Elizabeth A. Gordon, Richard Falckenberg, Paul Natorp, Hans Vaihinger, and Wilhelm Wundt collections on philosophy and religion. In addition to those above mentioned, less than 13 collections concering to history, pure science, music, and aesthetic.

III. Collection building after WWII.-- Special projects

After WW II, drastic changes in higher education came about as a result of the influence of U.S educational systems. The reform and development of the educational system was supported by Japanese economic growth. Evidently, there was no importing of foreign

books to Japan from 1940 to 1949, so in the early 1950's most of Japan's universities dedicated themselves to acquiring the missing academic journals of this period. After 1950, fortunately enough for Japan, her economy kept growing at annual rate 10 percent (GNP) for nearly 20 years.

The remarkable period for collection making in Japanese universities came after the 1970's. The Government provided financial aids to private schools to support their facilities including library acquisitions after 1970, and the book purchasing budget for larger collections was also allotted to national universities under the condition that those materials purchased by the budget be used for interlibrary loan in principle and catalogued in that fiscal year, another supplementary budget for improving trade imbalance was approved and 500 million yen was provided to the Ministry of Education for purchasing larger foreign collections in 1978. Also 1.5 billion was allotted for art objects to the Agency of Cultural Affairs. Additional efforts were been made in some older universities who launched fund raising projects to purchase special collections in commemoration of their centenary anniversaries.

Special collections acquired in this time, in contrast to the earlier ones, included many reports, documents, periodicals, and papers. Except for a few collections, fifty percent of those consisted of reprints, microfilms partly with originals, and those prepared by bookdealers. A list of special collections acquired by this special budget was compiled by Tokyo University Library in 1985. 9) It included 209 items, 151 of

which are in Western languages. Of all these Western language items social sciences accounted for 68 % , and out of 151, 54(36%) originated in U.S., 35(23%) in U.K., 18(12%) in Germany, 16(11%) in France, 3(9%) in Russia etc. 9).

Notable collections came to Japan in the beginning of this project supported by the special budget arrangement. Some of these were: Collection of Social Sciences in Modern Europe, Hobbes collection, Mazarinades, Mirabeau collections, Charles Perrat collection, Boris Souvarine collection, Geoge Vernadsky collection, etc. In addition to the above collections supported by the Government special project, Hitotsubashi University had an active project for building collections. Its collections were acquired with the university funds and with donations from its sponsors. Those include: Burt Franklin Collection, Bernstein-Souvarine collection, Toike collection (assembled by Peter Eaton). Apart from those, Joseph Alios Schumpeter collection was donated to the university. Senshu University acquired one of the most comprehensive collections on the French Revolution assembled by Michel Bernstein. If space allows, it should be mentioned more about notable collections.

In a comparatively short period, Japan adapted herself to European culture supported by economic growth. After WWI, many excellent collections were brought into Japan,including first class original monographs selected and organized by prominent scholar-collectors. More recently, collection building in the university library reflects trends toward acquiring primary sources with microform that provide the opportunities for full-scale research on European culture.

Books and articles:
1) Dore, R. P., Education Tokugawa Japan, (Berkeley, 1965) pp.161-166.
2) Tokyo Daigaku, Tokyo daigaku hyakunenshi, bukyoku-hen [Fuzoku toshokan] a draft (Tokyo,1980) p.16.
3) Whitney, W.D., On the adoption of the English Language in Japan. The letter of June 29, 1872 to Arinori Mori, Education in Japan. (Broadway, 1873) p.421.
4) Kimura, Ki, Meiji honyakubungaku nenpyo, Meiji bungaku zenshu 7. (Tokyo, 1977) p. 411-435.
5) Monbusho, Monbusho nenpo (Tokyo) 1(1873)-
6) Monbusho, Daigaku toshokan jittaichosa kekkahokoku (Tokyo)1(1945)-
7) Yuasa,M., Nippon kindaikagakushi no jidaikubun nitsuite, Meiji bunkashi ronso. (Tokyo, 1952) p.838.
8) Kokuritsu Kokkai Toshokan(NDL), Zenkoku tokushu korekushon soran. (Tokyo, 1981).
9) Tokyo Daigaku Toshokan, Tokubetsu tosho sogo mokuroku 1987-1983, (Tokyo, 1985).

*For further information to Hosoya, Sinji, Zenkoku keizaisho korekushon, Keizai Semina, no. 300. 1980. pp.86-107.

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Divisions: Educations and Research

Section: Round Table Library History

121-LIBHI-2-E

TRENDS OF LIBRARY HISTORY RESEARCH IN JAPAN

By

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TRENDS OF LIBRARY HISTORY RESEARCH IN JAPAN

Hiroshi Kawai, Yukio Fujino, Atsushi Ishii, Yoshitaka Kawasaki

Research in library history has developed recently in Japan, not only because of the increase of publications, but also because of deepening of its research method. The traditional descriptive method is being criticized and the social meaning of historical events and facts is being considered.

Although several valuable monographs were published before the War, the authors had to limit their study mainly to the description or chronology of the establishment and management of libraries. After the War, Japanese people secured fundamental rights through the new Constitution and in 1950 the Library Law came into effect. At that time researchers started to evaluate the pre-war popular movement. Ishii proved that the Japanese educational institution had been molded 'from the top' downward by the government, and that public libraries acted in the role of infusing the absolute idea of imperialism. He also made clear the realities of people who demanded reading facilities. Ishii's work promoted a new sociological method of library history research. The complete history of public libraries has not been written yet, nevertheless, Nagasue's recent book on the history of public libraries from Meiji to the second World War is worth mentioning. Important also is the documentary compilation from newspapers, 1931-35, ed. with an introduction by Shimizu. Public library history after the War is covered by a JLA publication. Local library histories have been published in abundance, for libraries in Japan are similar to public administrative organizations. But for that reason original research has not been fully developed. Brief biographies of 18 leading figures are included in People who created libraries : Japan. Works of representative librarians before the War are being published as a series, and Tomosaburo Sano's volume and others are available. The bibliography of library history is still insufficient.

Researchers apply mainly social science methods, so that their articles are written from the sociological, economic, and political science standpoints. With these methods they pursued reasons why library services had not been developed before the War, and found the fundamental factors or their hindrance as follows : 1) structure of traditional agricultural society, 2) immaturity of capitalism in Japan, and 3) educa-

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tional policy of imperialism.

Research in American library history made a great progress for two reasons : 1) 'revisionist' interpretation brought influence, and the critical appraisal of historians produced new results, 2) the experience of American librarians taught us how to deal with problems of 'rationalization of procedures', 'economic depression' and 'on-line information services'. Original research includes Ogura's study on Melvil Dewey; Kawai's article on the formation period of the University of Chicago , Graduate Library School. Kawasaki recognized three distinct generations among American library historians. Translations from English of some basic works of Butler, Shera and others had an influence and aroused interest.

Yamaguchi's history of Deutsche Buecherei is a chronological study with regard to its relation with the State. Introducing libraries of the Third Reich, Kawai analyzed the structure and process of censorship in fascist Germany. Bibliotheksplan '73 was discussed by Hirano and biographical sketches of Leibniz, Graesel, Ebert were written. Translations of Vorstius' textbook and of Karstedt's treatise were important. Maruyama and Hirano had an impact on Japanese librarians who hitherto knew only Anglo-American practices, by way of introducing Prussian cataloging rules.

The historiographical study of Anglo-American and German libraries was sufficient for us to be aware of the importance of the critical treatment of historical materials as well as of principles of interpretation. For that matter Karstedt's three points were of value : 1) ideological patterns should be identified in order to interpret history, 2) each ideological pattern can be attributed to fundamental factors in society, 3) social factors of one particular society stamps its spirit upon libraries, which in turn reproduce the same spsirit upon individual members of the society, and contribute to the continuation of it.

Japan is still a developing country in terms of library research. Disciplined researchers are not many, and discussion is not active. The Japan Society for Study of Library History established in 1982, aims to overcome this situation and improve the level of research. Japanese Journal of Library History was issued annually from 1984. Summer seminars could summon more than 50 participants each year. Yet, we have only planted a seedling. Harvest will be in the future.

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Impact of the Information Society on the Library

by

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Introduction

It is expected that in comparison with the present industrial society the coming Information Society will be quite a different societal system due to the impact of the information revolution centered on computer and communications technology. It follows that the library system, an essential part of the societal system, will change dramatically in keeping with the transformation of human society as a whole.

Promotion of Library Automation

The first effect of the impact of the Information Society on the library will be library automation. Most of the work of the librarian will be taken over by the computer, not only on the manual side of the work, such as acquisition, processing and location of books and journals, but the mental work of classification, cataloguing and referencing services will also be substantially or even completely computerised. Almost all of the librarian's operational work, such as circulation control, lending and receiving, will be done completely by computer.

Further, the automation of the librarians' operations will reach an even more positive level by the revolution in printing by electronic reproduction.

The electronic publication system will become very popular in the Information Society and it will be possible for books and journals to be recorded on memory disks to be printed out as required.

This does not mean that the library will be made up of only electronic memory disks and that books and journals will disappear from the library, but it can be assumed that for the reasons given below a substantial part of books and journals will be replaced with memory disks:

- Reading by visitors to a library will decrease and be limited to difficult-to-obtain special books such as classics or historical books.

- The cost of maintenance of books and journals will greatly increase because of the limitation of space and the physical damage to old books.

As a result, much of the usual operational work of librarians will be eliminated, and the automation of library operations will be greatly increased.

Formation of Library Network

The second effect of the impact the Information Society will have on the library will be brought about by the combination of computer and communications technology and the formation of library networks, seen in two dimensions: Home Librarying and Global Library Network.

Home Librarying, a new word like home shopping and home banking, means that a citizen can have remote access from home to a library by using one's personal computer. All library services including referencing, reading, bibliographing, copying will be available at home.

Among the services required, only reading will be inadequate because of the limits of display technology.

Other than this, all services can be very satisfactorily provided.

The Global Library Network; networks between libraries and libraries will be established on a global scale, and when this is actualized and when an automatic translation system has been developed, the sphere of activities of libraries will expand unprecedentedly. A new international standard code will be introduced, and an international bibliographic control system established. An international library clearing house will make its appearance for the

exchange of messages and for questions and answers from libraries everywhere.

By combining Home Librarying with the Global Library Network, any person in any country will have access to the global library network through the home terminal.

Transformation to Knowledge Utility

The third and the most decisive impact that the Information Society will have on the library will be transformation of the library's basic characteristics from Reading Library to Knowledge Utility.

The fundamental function of the present library system is to collect and store books and journals, providing reading facilities for visitors to the library. It should therefore be called a Reading Library.

In the Information Society, this basic function of the library will be greatly reduced and, by contrast, the knowledge oriented research and reference service will become the most important function of the library.

The core of the transformation of this library function is the development of a Full-text/Full-term System (F/FS). It will be possible for this system to be developed on establishment of electronic knowledge oriented retrieval

based on an electronic publishing system.

The distinguishing performance of F/FS is that any kind and any form of text (abstract, summary, condensed or full text according to subject, relational text, historical record, essence of theory, etc.) and term (by keyword, definition, origin, relational term) will be available from millions of books and journals to meet the various and specific needs of library users.

This can be called the most critical, functional and qualitative transformation of the library. By this means, the library will become a knowledge utility as one wing of the intellectual infrastructure in the Information Society.

Future Image of the Library

The future image of the library deduced from this analysis will be:

First, the external view of the library will change dramatically. It will become an invisible automated library. Big buildings adorned as formerly like a king's palace, with extensive bookshelves and reading rooms, will disappear, their place being taken by a databank equipped with computer and database.

Next, the library will become a global knowledge utility. For example, Mr. Smith, let us say, is an amateur etymologist; he has direct access to the local library from his home, and asks "Give me the origin of such and such a word." After a few minutes, a dozen or more different views on the origins of the word appear on his screen, excerpted from books relating to the history of words put out by the F/FS. He examines them, and prints out a copy. If not satisfied, he will ask for national retrieval through the local library. The local library will then ask other libraries all over the country via the nationwide network. If Mr. Smith is still not satisfied, he can ask for global retrieval and get the complete historical records on the origins of the word up to the present from the global library network; in addition, he can get all this in his mother tongue by the automatic translation service.

Finally, librarians will be liberated from the tedium of manual library operations and will work in intensive intellectual activities. They will become researchers of library science and create new systems for the electronic library. They will become trained referencers to meet the varied and complicated needs of users. They will be able to provide goal-oriented knowledge from thousands of books and journals.

It should be said that the responsibility of librarians in the future electronic library will become much more important and far-reaching.

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The impact of information society on libraries in Japan- its emblematic appearance.

By

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The impact of information society on libraries in Japan - its emblematic appearance

Nobutaka Sakurai

Introduction

Invisible and immaterial information is becoming an important social and national resources which is not less dispensable than energy or industrial products. An information society which is strengthening the generation and dissemination of information in order to promote the growth of social, economical and cultural activity is coming to us and is also true in Japan. On the other side the library world influenced by various information society is serving for the storage and dissemination of information. Besides,library world is making its best effort to solve the problems and fulfill the needs brought by information society. This paper deals with crusial and emblematic problems among three particular fields chosen from Japanese library world,i.e., public libraries, academic libraries and library education.

1. The influence on public libraries.

In the fields of public libraries, we have mainly two typical kinds of activities -development of online network systems for cataloging and trial movement on utilization of new media systems in library services.

1.1 Developing an online network system for cataloging.

In the National Diet Library(NDL) and some prefectural libraries they have developed and also developing their own machine readable catalogs (MARC). Besides,now they are trying to set up online networks with the infrasturactural libraries in order to share the catalogs. For instance,the NDL has experimented with some of public libraries(metropolitan,prefectural and municipal libraries) on the access of online information and retrieval of Japanese books from NDL database since November,1984 (ref.1). This project was undertaken to survey and study the online registration system,test of communication lines and protocols for bibliographical data exchange. The survey also studied the online network system for cataloging among the participant libraries. Now, there are 37 libraries taking part in this project.

Among metropolitan or prefectural libraries, Hyougo Prefectural Library has complied the catalog using computer in the form of book in 1974. Saitama Prefectural Library is compiling an union catalog among 4 prefectural libraries since 1985. Shiga Prefectural Library has developed its own online catalog data retrieval system. It is now available for municipal,town and village libraries inthis prefecture since 1985 (ref.2). Toyama Prefectural Library (ref.3) and Tokyo Metropolitan Central Library (ref.4) are also planning for online network catalog system. Likewise, among municipal,town and village libraries, Nakano Ward Library in Tokyo is planning to make its own MARC and an union catalog among their libraries in the same ward (ref.5).

1.2 Utilizing of new media system.

The new systems such as INS(Information Network System),CATV (Cable Televi-

sion)),CAPTAIN(Character And Pattern Telephone Access Information Network),Van (Value Added Network) and/or personal computer network systems,voice mail system and so on are developed in general for the public use. Some libraries are tending to put them for practical use. Its typical examples are the utilization of CAPTAIN system and INS in library services. Sumida Ward Library in Tokyo and Atsugi City Library in Kanagawa Pref. have had an experience on use of CAPTAIN system. Mitaka City in Tokyo is examining INS system and setting its terminal in Mitaka City Library. Likewise, Yokohama Municipal Central Library is planning to put these new media systems in active use (ref.5).

1.3 Problems awaiting solution.

Networking with other libraries and introduction of new media systems into library services are the natural results of advanced computerization of library and also the need of information society. But there are many problems on actual use of them.

Many libraries are obliged to use a private sector's MARC(Oosakaya's,TRC's, Nippan's,etc.) and Japan-MARC simultaneously. It is because the time lag between the publication and input of its bibliographical data into Japan-MARC is too long. Besides,the efficiency of data matching through ISBN is not very efficient because of untimely diffusion of ISBN. On the other hand, libraries do not have a tangible policy on the integrated bibliographical information system of a large region, as pointed out by H. Minai (ref.7). Consequently, librarians of differnt district libraries are compelled to discuss and make a study on a common network structure to transcend the biblographic information to their own administrative districts. In parallel with networking of online cataloging system,it is an dispensable requisite to systematize the transfer and/or delivery of library materials among them.. The Kawasaki Library at Kanagawa Prefecture is using a facsimile system for transmitting materials (ref.8),and how to use such new media is a present subject for libraries hereafter.

On utilization of new media systems in library services more attention should be paid on the usefulness of the system as well, for instance,CAPTAIN system use to provide not a very recent information as compared to the Weekly Information of New Publication made by Nippan (Nippon Shuppan Hanbai Inc.), and thus Mitaka City Library uses its CAPTAIN system just to provide the information on the uses guide of the library. Moreover,an online cataloging system connected with an online circulation system,naturally,should be non-open system in order to guard the privacy of an individual user. Accordingly, we have to be cautious in connecting open systems like INS system with non-open systems such as circulation system (ref.9,10). Suppose,if this is a reason why public libraries would hesitate to introduce open systems like INS system into their own closed systems, one must pay much attention in the process of connecting the new media with traditional library services for better information service. Moreover,the useful informations for our daily life activities which are provided by new

media, should also be considered an important aspect to be integrated into library information system.

2. The influence on accademic libraries.

In the field of acadamic libraries Gakujutsu Joho Centa (the National center for Science information System),Japan was founded as a national co-operative institution for common use in April, 1986. The influence of this center seems to have a great in an activities of academic libraries in Japan hereafter.

2.1 The process of the Centers's Foundation.

Japan was quite aware of information and library science since a decade before and thus, the history shows that there exits the Tokyo Daigaku Joho-Thoshokan-Gaku Kenkyu Senta (Research Center for Information and Library Science,Tokyo University) on January 1976. Later, a new center, The Tokyo Daigaku Bunken Joho Senta (Biblographic Information Center,Tokyo University) was formed integrating Tokyo Daigaku Joho-Thoshokan-Gaku Kenkyu Senta with it. The function of the Center was to complile a Gakujutsu Zassi Sogo Mokuroku (Union list of Scientific Periodicals in Japanese and Foreign languages) and then make available for all academic libraries in Japan using electronic machines. Furthermore, the necessity of structuring of academicinformation system was recognised in general,and a new center Gakujutsu Joho Senta sponsered by the Ministry of Education was founded as a new national institution for common use. This was reorganized as Bunken Joho Centa in April 1986.

The idea on formation of this center was orginated by a report entitlled as "How a National Center for Science Information to Present in near future" (Ref 11) produced by the Gakujutsu Singikai (Science Council) for the Minister of Education in 1980. The report has listed the center's functions as follows; (1) Enrichment of the functions for acquisition and dissemination of primary materials, (2) Establishment of information storage and retrival system, (3) Promotion and structuring of scientific databases and (4) user's training. Moreover, the idea of the Scientific Information System which was crystalised in the report, was to share the scientific information resources in the field of cultural, social and natural sciences for common use and also to support the clients of academic institutions for education and research activities.

2.2 The present state of this Center.

This center has planned to function as a National Center (NC) and thus divides whole academic libraries into several Regional Centers (RC) and member libraries(ML). A national library network is to formed connectinfg all RC with NC. In parallel to it the center is working for the development of online biblographic data retrival system, structuring of database system and union catalog system. As the result of consultation, the center decided to focus on service of online information system for cataloging like OCLC (Online Computer Library Center)in USA, rather than online information retrival service and online database service. Now, the center is providing the service mainly on an online

cataloging service. It might be because historically the center was transferred from Bunken Joho Centa (Biblographical Information Center), to the present one and the real activity of this center is yet to come.

2.3 The probelms awaiting solution.

It seems that the center and the member libraries have some problems which are worth to make due consideration here.

Looking from the center's point of view (1)the problems in terms of the information retrieval service are - how to coordinate its service with other organizations such as JICST(Japan Information Center for Science and Technology), DIALOG,SDC and so on. Besides,it seems that academic clients of universities and colleges do not like to use the service of this kind. So,it is also a problem of the center to arouse the interest of such clients in this service. (2)The problem on the structuring of scientific databases are - how to get the cooperation from each member library in this activity. Although it is necessory and essential to develop home made databases as much as possible,each library seems to get only small benefit at present time against a great deal of input loads.Thus,the solution of this problem truely hinge on the cooperation of member libraries. (3)on structuring the bibliographic database (union catalog) ,each member library also has the same problem as described in (2). On the other hand, looking from the side of member libraries,there are some libraries which intend to connect directly with the center in the processes of computerization of their library.The movement of this kind might pull down the plan of NC, RC and ML centers. (4)the problem that is facing by member libraries,including the problem mentioned above are - how to connect the center's online cataloging system with house keeping system of each library. The above mentioned problems are subject to be awaiting for solution hereafter. However,it is necessary to make the beginning investment for the structuring of databases and network systems. Now we have to seek and built up the philosophy of "sharing of information resources".

3. The influence on library education.

It may be appropriate now to introduce the present state of Japanese library schools,when one talks about the influence of information society on library education in Japan. We have Toshokan • Joho Gakka(the School of Library and Information Science), Keio University as a typial school in Japan. However, the author would like to introduce Toshokan Joho Daigaku(University of Library and Information Science) as a new school in the field of library education where he belongs.

3.1 The foundation and the present state of the University.

The University of Library and Information Science(ULIS) is the only national institution dedicated for higher education in the field of library and information science. The goal of this small university (undergraduate students about 530, master student 15 and teaching staff about 50) is said to contribute in the

advancement of education, research and science and culture applying recently developed theories and practices in library and information science. ULIS was founded in October,1979, and accepted its first batch of students in the Bachelor of Arts(BA) and Master of Arts (MA) program in April,1980 and 1984 respectively. The campus is located at Tsukuba Science City, Ibaraki-ken.

The curriculum for BA program is divided mainly into two types i.e., Basic subject courses and Professional courses. The former provides Linguistics, Directed reading of classical Chinese,Management information,Management technology,Information education in society,Information mathematics,Information technology,Electronics,etc. This helps the students to get the fundamental knowledge for studying the professional courses. On the other side,the latter is composed of 5 groups,i.e., Principles of library and information science,Relation of information and society,Information materials and media,Organization of information,and Library and information systems. In general the objective of the university is to provide information science courses as much as traditional library science courses. Furthermore,the design of curriculum is made in such a way that students have large horizon of course selection. It is because the ratio of compulsory courses to elect one is 2:8. On the other hand,the professinal courses of MA program are divided into 8 groups,i.e.,Basic course of library and information science,Cognitive theory of information,Construction of information,Society and information,Information media,Systematization of library and information sources, and Utilization of information machines.

This university also provides special facilities such as Developing Center for Library and Information Systems,Center of Media and Equipments,and Open Library (Kokai Toshoshitsu) to backup the teaching and research activities of the university. The Developing Center accomodates a main-machine M-260H(CPU 16MB,Disk 12.6 GB),sub-machines VAX-11/750(CPU 2MB,Disk 456MB),PDP 11/44(CPU 1.25MB, Disk 282MB), and about 110 visual display terminals. The Media Center keeps various equipments which are available for developing and producing micro form of resources. The Open Library is open for children and adults of the surrounding community.

3.2 The problems should be solved.

Since it has not been long that the university was founded, the curriculum at present have several problems to go with the needs of information society.Thus, the curriculae are now under re-examination in order to meet this demand. Considering the ultimate aim of information storage and transfer in society the library is no longer the center of the universe of documents and information. However, when we have the challenge to integrate library science and information science, people become an integratng focus(ref.12).

In addition to it, information science is viewed as critical to modern professional education. Thus, in the present world no professional can avoid the learning of information science. It is of course for librarians(ref.13). Acco-

rdingly, the main problem is (1)how to balance the curriculum between library courses and information courses. However,it is sheer nonsense to put only technology based information science, excluding the user's dimension of information requirement in the curriculum. Hence, it is quite difficult at present time to get sufficient faculty members with the right blend of theoretical knowledge and practical experience for both library and information science(ref.14). Consequently, (2) the way in which we can coordinate and integrate the information education with library education is our problem.

Lastly, we may visualized the distribution of graduates of 1986 in different organizations in order to know the scope of our education. Hence, they are; one third (about 40) graduates wanted to secure professional employment in library field and are serving in this area. Among the rest about 30 and 60 got an employment at software companies and other industries respectively. Additionally, 6 graduates were enrolled in the graduate courses at this university and Tsukuba University. Although it is desirable to say that there is a wide range of job opportunity in different sectors, (3)it seems to be a problem to get jobs in library field. It is still a narrow gate for many graduates in the area of library.

Epilogue

The criticism of Japanese libraries can be made on their underdeveloping states. Truely,they are just starting to response the needs of information society at present. However,the problem of their underdeveloped states could not be recovered in a stroke by the use of new technology. The main subject is based on the fundamental idea of library activities,namely "the sharing of information resources" mentioned above. Understanding of this idea might be a crucial key to recover their underdevelopments.

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Libraries for Scientific Research in China

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As an institution of acquisiting, processing, disseminating and utilising information resources, libraries are closely related to scientific research activities.
This characteristic of libraries is decided by the major function of libraries - disseminating information. Providing information for scholars and researchers is not only the task of scientech libraries, but also that of other types of library. The only difference, if any, will be that, because of the type and mission of the library, individual libraries may differ from the patron and service range in providing service for research.

There are three main forms of library service for scientific research in China: comprehensive library service, specialized library service, and teaching-research library service.

1. Public Library System That Provides Comprehensive Service for Research

The libraries in this system usually have built comprehensive collections, almost including every field that the patrons would be interested in. They aim at meeting users' needs in every effort. This system mainly has two levels: national library and provincial or municipal libraries.

1. The National Library of China. It is also called Beijing Library. The National Library of China is funded by the state. During its first forty years, 1910-1950, it had a collection of 1.4 million volumes, and up to 1983, it had increased to 117 millions. The library provides various kinds of service for research: in-house reading, circulation which is limited to meet the needs of the government, military, and important research projects, interlibrary loan, including domestic and foreign countries, photographing, book exhibitions, bibliographical information service, etc.

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The National Library is using the MARC of the Library of Congress of the United States in providing these services. The new library building is now being constructed. The new library will be computerized in circulation, information retrieval, and administration. A national bibliographic database and international online information retrieval terminals will be set up in the new library. This will lead to be a real national bibliographic center and the center of document retrieval network.

1. Provincial, Municipal Public Library System. Provincial, municipal public libraries usually locate in the local center of politics, economies, culture and education, and they are often the center of information resources and interlibrary loan in that province or municipolis. They are the primary component of the public library in China, and carry on the dual task of meeting the information needs of both researchers and the public. Provincial and municipal libraries take the advantage of their special collection and local documents to provide bibliographical and SDI services for scholars and researchers. Many of these libraries, such as Liaoning Province Library, Hubei Province Library, choose the provincial research projects as the patrons of SDI, this having been an effective method in serving the needs of research.

2. Scientech Library System That Provides Specialized Service for Research

The libraries of this system spread in various subject fields. They are organized by specialty, and, in accordance with the discipline, they collect, process, and store the information which will be used later to meet the research needs. Such libraries as the National Library of the Ministry of Geology, the Agricultural Academia Library of China, the Medical Academia Library of China, are those providing specilized services for research.

The Library of the Academia of China (now the Documentation and Information Center of Academia of China) is the central library in scientech library system. This system consists of four regional libraries and 140 information centers of institutes. In comparison with its past when there were only 17 libraries with a total collection of 630,000 volumes, the scientech libraries have been developed greatly. The present collection is about 20 million volumes, in which foreign language documents such as English, French, German, Japanese, Spanish occupy a big proportion. The central task of this system is to provide information services to the economic development and scientific research. These services including the following:

1. Coordinating and cooperating among the libraries in the system to share information resources;
2. Preparing for the establishment of information retrieval system;
3. Providing strategic information services for the policy-making and planning of the science research and development of the country;
4. Training professional personnel to improve their expertization in information profession.

Agricultural library system. The Agricultural Academia Library began in 1957. There is now a collection of 340,000 volumes, the feature publications collected being those of foreign and international agricultural organizations like Food and Agricultural Organization (FAO), International Rice Research Institute. It has built the exchange relationship with 176 agricultural organizations of 46 countries. The services it provides mainly include:

1. In-house reading;
2. Circulation;
3. Bibliographical information service-providing subject information and publishing a serial Foreign Scientech Catalogue;
4. Book exhibitions, usually held during conferences;
5. Preparing for the establishment of information retrieval system.

Since 1980, the Chinese Agricultural Document Catalogue, which will be divided into 60 volumes, has been publishing on a subject basis.

Geology library system. As a center of this system, the Geology Library of the Ministry of Geology and Mineralogy administers the geology libraries in a nationwide range. This Library has 300,000 volumes in geology, mineralogy, and exploration. One of the major publications collected is periodicals and the others are the publications of foreign geological organizations, the paleontological documents, and the domestic and foreign geological maps. The Geology Library publishes two retrieval tools: Chinese Scientech Catalogue: Geology and Foreign Scientech Catalogue: Geology. In addition to this major information service for scientific research, it is building a retrospective information retrieval system of foreign geology documents in cooperation with the Beijing Computing Center.

Medical library system. The library of Medical Academia of China is the central library of this system. In its 370,000 volume stock, there is a large proportion of Chinese medical documents, periodicals and foreign publications. The library provides inhouse reading, circulation, interlibrary loan, photographing, SDI, etc. for medical research.

3. Academic Library System That Provides Services for Teaching-Research

Universities and colleges usually possess high qualified faculties and undertake significant research projects as well as teaching. The rich collection in their libraries creates a very good environment for researchers. The dual function of academic libraries - education and research - makes it important to provide effective information services to the faculty. There are currently 13 centers of foreign textbook locating in Beijing, Shanghai, Guangzhou, Wuhan, and other cities. These centers coordinate in acquisiting different subject textbooks as well as up-to-date subject information. By interlibrary loan, faculties in different region can obtain the timely information for teaching and research with less expenses. Some academic libraries, for instance, Wuhan

University, are planning to set up research rooms in order to provide better services and attract researchers to use the library.

In recent years, academic library funds increased average 8 per cent each year, and the collections and personnel also increased very much. All these ensure the development of the information services provided for teaching and research.

4. Problems and Trends

Although the libraries have been developed greatly, some problems are still existing. One major problem is that, because of the inadequate catalogue facilities and too restricted rules in using the library, the ratio of use of the library is still very low. Closed-stack which means users can access the collection only by catalogues is used now in most libraries, thus increases the chance that the books remain undiscovered. This situation occurs not only in public libraries but in scientech and academic libraries.

Another problem is lacking coordination and cooperation between library systems. Establishing national and regional library networks has been proposed for many years but actually, little has been done in this field. Even some basic tools like union catalogues used for cooperation in acquisition and interlibrary loan are missing part in our library property.

The insignificant personnel and disequilibrium between the qualification and the need to carry on the job are also the problems that seriously affect the library services for research. Many middle and top library managers lack the knowledge in management and modern technology, and this results in a low level of operationg a library or even the whole librarianship.

Fortunately, some library managers and library and information educators have realized the root of these problems. They are learning and using new methods and techniques in managing libraries and training new librarians. The reformation is now being taken in library administration and organization. The traditional pattern of library services, namely passive pattern, is being changed into proactive and active pattern. With the application of computer technology in library work, the effectiveness of library services for research will be improved and enter into a new age.

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APPENDIX

Library Development in China: 1949-1983

Type of lib.	1949		1983	
	No. of Libs.	Vols. (Million)	No. of Libs.	Vols.(Million)
National Lib.	1	14	1	117
Provincial & Municipal Lib.	55	260	2038	2000
Academic Lib.	132	7.94	745	2340
Scientech Lib.	17	6.3	148	220

Note: Provincial & Municipal Libraries include county public libraries.

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Strategic Planning for Information in the Research University: A report on a project and its implications for Library Education

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STRATEGIC PLANNING FOR INFORMATION RESOURCES IN THE RESEARCH UNIVERSITY: A REPORT ON A PROJECT

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PURPOSE

This is a brief description of the research program being carried out through the Graduate School of Library and Information Science (GSLIS), UCLA, under funding from the Council on Library Resources (CLR). The program is focussed on the issues, problems, and needs for research with respect to long-range strategic planning for libraries and information resources in the research university of the future. It has been funded with the intent, as expressed by CLR, that UCLA serve as a prototype for establishment of such programs in a small number of major universities for the following purposes:

- o exploring the effect of technology on the ways information resources will be used in the research university
- o seeking better understanding of the information resource requirements of major disciplines
- o determining the role of information resources in the work of individual scholars, researchers, students, and teachers.

The objectives in these investigations are two-fold. First, there is need to understand better the relationship between information resources and the work of scholars and teachers, especially in the context of technological change and in recognition of differences among disciplines. Second, there is need to determine how the university should plan and organize so as best to meet those requirements.

These two objectives are inextricably inter-related, so GSLIS plans to deal with both aspects, since it would be inappropriate to separate the problems in determining needs from those involved in meeting the needs.

CONTEXTS OF INTEREST

In undertaking this project, UCLA is responding to several related concerns. First, there is the general concern which transcends universities; it relates to the largest context of "information as a resource in our society". Second, there is the more specific concern with the situation in the university as an institution. Third, there is the specific concern that UCLA has about the future of its own "library", which at UCLA has been interpreted with the broadest possible definition. Fourth, there is the academic program concern with continuing to strengthen the content of professional education in library and information science, both in general and specifically in the GSLIS

at UCLA.

The Most General Context

The effects of information technology and of the increasing proportion of the national work force engaged in information work have been the focus of concern with "information policy issues", including such things as interaction between the public and private sectors, the best means for increasing the availability of information to the public, the effects of government policy upon that availability. Within that general context, a matter of fundamental importance is the relationship between national productivity and the use of information as a resource in society.

Part of the general context arises because of the complex interaction between modern communications and computer technology in the delivery of information resources. In this respect, the California legislature asked the University to examine "Telecommunications and Information Policy". Of course, there is a strong focus in their concern upon issues related to technologies rather than on the information. There is even more of a tendency to emphasize the industrial and commercial aspects and to ignore the role and needs of the academic community. Furthermore, there is a natural concentration of concern on the technologies, as such, without clear attention on the institutions of society by which those technologies become effective, among them being the libraries and especially academic libraries.

In recognition of these concerns, both general and specific, conferences were held at UCLA under GSLIS aegis -- one in 1980 sponsored by the Council on Library Resources, the other in 1984 sponsored by the California State Library. The first was concerned with the future of the university with respect to the changes; the second with "Libraries and the Information Economy of California". Both clearly identified the need for research to develop the framework on which to base "information policy" decisions.

These prior commitments by UCLA to the area of general information policy studies lie at the core of the current program. Part of the purpose of the GSLIS research program is to continue these kinds of studies, with special focus on information in societal productivity and the effect of information policy decisions upon the library and its role in society.

Even more generally, beyond the importance of the "information economy" of the United States, it is necessary to recognize that these issues have the same importance elsewhere in the world. International data flow and the use of information resources in both developed and developing countries is therefore also a matter of concern for the GSLIS research program.

The University Context

The academic research university is an institution which depends upon the ready availability of information resources, of all kinds. In a very real sense, it is the "information institution" beyond all others. Those information resources take a variety of forms: the faculty, the library, the computing equipment, the media and related facilities, the laboratories, the museums, the archives. And they are used in the university for a variety of purposes and in a variety of ways.

Until recently, these information resources have been relatively stable, well defined, and reasonably well organized within the university. Scholars have well established patterns and expectations about the use and availability of them. The university has created libraries, computing centers, and similar administrative units to manage them. While there have been problems and issues of concern within individual institutions, until recently they represented simply the usual ones of management in a complex enterprise.

The changes in that previously stable, well defined situation are dramatic and they have immense effect upon both the organization of the university and the patterns for use of information resources in scholarship, research, and instruction. Fundamental changes are affecting the ways in which information is created, produced, organized, made available, protected and preserved, and used. They are affecting the ways in which scholars work, the methods of publication, the means for distribution and access. They are affecting the organization of the university and of the libraries and computing facilities within them. Simply to illustrate, there are immediate concerns on the UCLA campus with the acquisition of instructional computer programs, data bases, and documentation. Currently, faculty are forced to deal with these in an ad hoc, individual manner; as these forms of information resources become increasingly more important to both insturction and research, more formalized means for management of them will be needed. As another example, management of the UCLA Film Archives has been a matter of concern for several years, as these information resources have become important in both scholarship and instruction; the ad hoc committee appointed to advise on this concern led to the appointment of a continuing committee on The Library of the Future.

Just as the international implications are important in the most general context, they are significant for the university context as well. The British, through SCONUL, are concerned with exactly the same kinds of developments in the use of information resources within universities, and there are efforts in the European Economic Community more generally to deal with them. Even in the developing countries, universities face the same kinds of questions. Thus, the impact on universities internationally will also be considered within the scope of the GSLIS research program.

The UCLA Context

Even more specifically, UCLA itself has been concerned with these kinds of questions in the context of its own strategic planning for library and information resources on the campus. Similar questions were posed by a special ad hoc committee, convened by the Executive Vice-Chancellor, which was charged with responsibility for recommending the means for handling the wide range of information resources available to the campus community. The effects of formats, the means for access, the needs of users, the range of alternative organizations, the management of collections (of a variety of media), the overwhelming implications of the technologies -- these all raise problems essentially unsolvable by a committee, especially one of limited life, but which must be solved if planning is to be effective. However, the result of that ad hoc committee was the formation of a long-term Committee on the Library of the Future with reponsibility for development of the long-range strategic plans for the University with respect to these issues.

The Professional Educational Context

Finally, we turn to the context of education for library and information science. The GSLIS research program is seen by the campus and GSLIS as a means for maintaining the position of GSLIS as one of the leading institutions in the country in that field. The insights gained from the studies it is hoped will influence the future educational programs of GSLIS and of the University as a whole. Beyond that, the program serves as a means for maintaining the position of the GSLIS within the University and strengthening its relationships with the several academic departments and professional schools.

INTENDED RESULTS

The output of the ongoing GSLIS research program will be both specific to UCLA and of more general value. First, an intended result will be a strategic plan for consideration by faculty and administration at UCLA as part of the basis for their development and management of information resources at UCLA itself; with that as an intended result, there has been great incentive for involvement of UCLA faculty and administration in the process. Second, and directly related to the first, there would be an explicit testing of a process for academic strategic planning with respect to information resources; the intent is to document that process and the results in a manner that will make it available to other insitutions to build upon and relate to their own specific contexts; therefore, every effort will be made to provide a record that will be objective with respect to problems as well as process, results, and successes. Third, there should be some immediate publications arising from the studies in support of the work of the Advisory Committee and the Dsiciplinary Task Forces; while these will not reflect the results of formal research projects, the data developed should be of interest to others concerned with the same issues and will therefore be made available as publications of the program. Fourth, it is intended that there will be formal research projects identified by the Advisory Committee and the Disciplinary Task Forces of sufficient magnitude and importance to represent major contributions to advancement of the state of knowledge is this field; those projects will themselves be a most important result of the GSLIS research program, and reports, articles, and perhaps books arising from them will provide the most tangible and significant output. Finally, as part of the means for communication, it is planned that there would be periodic conferences involving universities concerned with parallel research programs; aside from the immediate value they will have for communication, it is expected that they will also result in publications, as "conference proceedings" or even as monographs.

THE COMPONENTS OF THE RESEARCH PROGRAM

The project, as planned by GSLIS, is based on six major components:

1) an administrative component, which will be responsible for management of all aspects of the GSLIS research program, including the necessary logistical arrangements for the other activities

2) an Advisory Committee to the administration of the GSLIS research program, starting with members of the UCLA "Committee on the Library of the Future" but augmented with additional faculty, librarians, and outside representatives, which will be responsible both for advice with respect to the overall conduct

of the program and for specific concern with those issues relating to the organization and management of information systems and services in the University including the identification of research that may need to be undertaken to resolve those issues

3) a set of "Disciplinary Task Forces", involving faculty from specific academic areas, which will be responsible for identifying the needs for information resources in their areas of interest or, as part of that work, identifying research that may need to be undertaken in order to establish those needs and the related ways in which information resources will be used

4) a set of study activities, parallel to the Advisory Committee and the faculty task forces, to provide immediate support to their work by obtaining and analyzing currently available data concerning specific issues identified by the Advisory Committee and Disciplinary Task Forces

5) a set of research projects, to be initiated as a result of the identification of needs for research by the Advisory Committee, the Disciplinary Task Task Forces, and/or the supporting study activities

6) an active program of communication for the purpose of making the process involved in the work of the GSLIS research program and the results obtained in it widely available, including a newsletter, seminars, conferences, and formal publication of both articles and monographs.

In this structure, the Advisory Committee and the Disciplinary Task Forces serve as the primary means for involving faculty from the broad range of University interests; the supporting studies are focussed on meeting the needs in those groups for specific information to carry out their work. The research projects that arise from their work will reflect gaps in the data immediately available or, it is hoped, specific research issues that are identified by participating faculty as important in their own right. The value and intent of the GSLIS research program lies in focussing attention by the University at large on the issues of concern in planning for the future of information resources in support of the functions of the University.

TIME SCHEDULE & BUDGET

It is expected that the current research project will involve between three and four years, starting on 1 January 1986 and lasting until 31 December 1989. The first year, calendar 1986, is now focussed on establishment of the administrative organization, the Advisory Committee, the Disciplinary Task Forces, and the supporting study activities. Of those, the first two are have been virtually already in being, so the principal activities will relate to the substantive work in establishing Task Forces and supporting studies. More specifically, the first six months (1 January through 30 June 1986) are to be

devoted to initial review of current data concerning use of information resources in each disciplinary area, to identifying future alternatives, and to preliminary evaluation of their likely impact. Then, the last six months of the year (1 July through 31 December 1986) would be devoted to detailed definition of needed research in both the use of information resources in academic programs and the issues in organization of those resources within the university.

At the mid-point of 1986, it is planned that UCLA will serve as the host for a Research Conference at which representatives of a selected group of other universities would join with UCLA and the CLR in a discussion of the general issues of concern to the Council on Library Resources. As part of the background and content of that Research Conference, UCLA would present the approach taken in this program and the results obtained during the first six months. This would provide a frame of reference for the other universities to explore similar, though probably different, approaches to the same areas of study.

It is anticipated that by the end of 1986 a number of concrete research projects will have been defined, to be carried out by faculty in both the substantive disciplines and the Graduate School of Library and Information Science (GSLIS). Those projects will serve either as the focal point for work in subsequent years of the GSLIS research program or as the basis for proposals to funding agencies (including the CLR but also including others). That is, in addition to the research projects funded from the GSLIS research program itself, it is expected that a number of research proposals will lead to funding from other agencies.

In this respect, it is important to note that the funding provided from CLR is minimal in the context of the cost of research projects needed to deal with the problems of concern. It does provide the basis for planning, for definition of research needs, for exploratory investigations and studies, and for initiation of studies, but many research projects themselves will need major funding, with support in part from CLR and in larger part other agencies.

Calendar years 1987, 1988, and most of 1989 will be devoted in part to a continuation of the work of the Disciplinary Task Forces, supported by specific studies, in the same pattern as planned for 1986. Beyond that, though, the major focus will be on carrying forward work on research projects generated out of the ongoing activities. Of course, the overall GSLIS research program is expected to continue long after the current project is completed, especially given the stimulus of this project.

The current research project has been funded at a level of $400,000 (total for the three to four year period). About 20% has been budgeted for management, with the remaining 80% committed to substantive work -- supporting studies, research projects, and communications.

THE IMPLICATIONS FOR LIBRARY EDUCATION

As discussed with respect to the contexts of interest, this projects is seen by UCLA as highly significant to its program of professional education for library and information science. Beyond the specific values to the GSLIS/UCLA described earlier, there are substantial implications for education in the field generally.

First, and probably most importantly, information policy as the term has been used in this paper is of fundamental importance to the librarian and information scientist. Library education must prepare its graduates to deal with the issues involved, to work with both the administration of the institution being served and the community of users in determining how resources should be allocated, to understand and be prepared to influence the processes involved indetermining the organization's policies with respect to information resources. These represent the general concern that GSLIS/UCLA has in undertaking this project, with the research university as the immediate institutional focus.

Second, many of the most pressing issues in information policy today relate to the information technologies -- computer, telecommunications, and new media for publication and distribution of information. These issues have been important to library education for at least the past twenty-five years, and there is every reason to anticipate that they will continue to be so for decades to come. For library education to remain au courant, it must deal with those issues as substantive parts of the academic curriculum. Studies such as the project presented in this paper are important means for doing so.

Third, among the most important concerns of library and information science education must be inculcating an awareness of the needs of the users. The approach taken in this project, by starting from the identification of those needs -- in the specific context of the university, of course -- is to emphasize their importance. The results should therefore have immediate value in the educational process.

Fourth, there are significant changes occurring in the patterns of scholarly communication, in large part as a result of the confluence of changes in both the technology and in the patterns of use of information resources. These changes must be considered by the library school in the design of the curriculum and in the development of its content. One of the objectives of this project is to identify those changes and to reflect them in the GSLIS/UCLA program.

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LIBRARY SCIENCE IN THE 21st CENTURY

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KEYWORDS

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the International Institute of Intellectual Cooperation
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The purpose of an activity called the "Bridge" which was started in Munich in about 1911 was to build a "Bridge" to connect various intellectual works. The activity was proposed by K.W. Bührer and Adolf Saager. W. Ostwald (1909 Nobel Prize winner) later joined the movement to help promote the organization of intellectual work. Ostwald, a noted scholar, had a significant influence on the activities of Bührer and Saager. Together, they advocated the necessity of certain rules such as Decimal Classification, created by Dewey of America and later improved by Otlet of Belgium. These rules were created to help integrate the intellectual work conducted separately by different people. Ostwald and others also proposed that the standard length-breadth proportion of the size of paper should be 1 :$\sqrt{2}$. Nowadays the size specified by ISO is based on these standard sizes, called World Format.

Bührer was the person mainly concerned with the business matters of the "Bridge". Its activities were discontinued with the outbreak of World War I. Though Ostwald, the leading person of the movement, was a renowned scholar, Bührer, an industrious artisan and Saager, a man with literary learnings, the Bridge lacked a competent organizer. Their achievements did, however,

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have a significant meaning. Ostwald had proposed an "International Union of Chemists". The concept is well detailed in his book entitled (The Chemical literature and the organization of science", which refers to the systematization of a bibliography of chemistry as well as literature in general. He also published, with C. Drucker's help, "Handbuch der allgemeine Chemie", in which he specifically discusses the standardization of physical chemistry.

F. Kuntze, influenced by Ostwald's work, published a book called "The Technique of Intellectual Work" in 1921, where he discussed the necessity of decomposition by content and arrangement by DC in books. Based on the above, the following is pointed out to better understand future developments of library science in the 21st Century.

1. Since the world is under multipolarization, we must broaden our views to cover every country in the world and we must develop new fields.

2. Scientific development is so prompt that the system of scientific knowledge is not absolute but relative, therefore scientific knowledge is a relative truth.

3. As the information electronics civilization is underway, we must pay much attention to newly developed electronic facilities.

An indexing by knowledge units as proposed in the bridge movement becomes more important as knowledge becomes more diverse and relative. As Kuntze said we need to have Zyklopen's eye in order to index all works. Therefore, indexing by electronic facilities will play an important role in library science education in the 21st century.

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Lessons from the past often aid us in understanding the present state of things and give us a clue to future developments. I would like to refer to an episode from history in order to talk about the given theme.

It was in about 1911 when there was an activity called "the Bridge" in Munich. It was an attempt to build a Bridge to connect various intellectual work. Human beings perform a variety of intellectual work, but since we do separately, there are cases of overlapping or failures due to lack of necessary information. The idea was first proposed by Karl Wilhelm Bührer born in 1861 and by Adolph Saager, born in 1879. Saager, possessed a Ph. D. and is known as a biographical writer with several books to his credit. Bührer, with no particular educational background, was engaged in printing and publishing in Switzerland. We have no knowledge of how and where they met, but later they co-authored a book called "Die Organisierung der geistigen Arbeit durch die Brück" (The organization of intellectual work by the bridge). They sent their book to Wilhelm Ostwald, who was the founder of physical chemistry, and was honoured with the Nobel Prize in 1909. Ostwald's activities went beyond the framework of physical chemistry. He was a man of many talents. He was keen on the theory of colour (Farbenlehre), proposed Monismus, a study to comprehend

the whole universe by energy movement, and he at one time devoted himself to the dissemination of the artifical language "Esperanto". He wrote a number of books on the subjects of his interest. At the young age of 34 in 1887, he started a periodical dovoted to physical chemistry entitled "Zeitschrift für physikalische Chemie". With Herculean effort he served not only as editor of the magazine by taking on almost single handed the book review and selection columns for quite some time, but he personally contributed many papers to the magazine. He also edited a book "Ostwalds klassiker der exakten Wissenschaften", a collection of historically important scientific documents. Throughout his work, he seemed always to be considering the question of what kind of documentation best contributes to the systematization of academic disciplines. He apparently readily approved of Bührer and Saager's book which deals with the systematization of intellectual work. He admired the book claiming "Rich and healthy idea is highly and systematically defined" (die Schrift bezeugt in ganz zweifelloser Weise das Vorhandensein weitreichender gesunder Gedanken von sehr hohem organisatorischem Wert)[1)], and he later came to cooperate in their activities. The point of the book is that since intellectual work is expressed on papers, the systematization of intellectual work amounts to a methodical arranging of the papers. It is neither possible nor advisable to carry out the systematization

work of the papers produced from all over the world at one place. They say the work must be broken up into subsectors and then integrated. The process is possible only when standardization is accomplished. In the initial stage certain rules must be applied in order to classify the intellectual work of different fields. The method to be used was Decimal Classification, created by Dewey of America, and later improved by Otlet and others of Belgium. The size of paper should also be standardized as well as the language. An artificial language such as Esperatno was desirable. The next step was decomposition of the book. While there are books written to be read from the beginning to the end such as novels, there are many other books where only a part may be required. In such cases it is not practical to buy a whole book, therefore books must be decomposed and books should be published by unit. This is the purport of Bührer and Saager's idea.

They set up an office in Munich aiming at diffusion of the idea. They published pamphlets and their first bridging work was collection and classification of picture cards. Ostwald donated the Nobel Prize money to the activities. There were sympathizers from many countries in Europe other than Switzerland and Germany. Among them were noted scholars such as Otlet, Ernest and Solvay (the inventor of Solvay Process, a method for manufacturing caustic soda). They published over thirty pamphlets.

The pamphlets contained such topics as a summary of DC (improved by Otlet and others) and a collection of paper size standards. As to the paper size standardization Ostwald was responsible. Before he reached a conclusion that length-breadth proportion should be $1:\sqrt{2}$, he spent some time on folding and unfolding papers. The "Bridge" team, based on Ostwald's principle, made samples of several sizes of papers. They called the standard sizes Weltformat (World Format). The size specified by ISO nowadays is based on the world format. The interesting finding in those pamphlets is that the idea of CPI (Cataloging in Publication) was already practiced in those days. Bührer claims that the idea of cataloging in publication was developed from discussions with Otlet's IIB (Institut International de Bibliographie) and others. Their calalogue included the classification number, author and title in a fixed format. The classification method used here was DC (a form of UDC improved by Otlet and others).

"The Bridge" movement went awry soon after the activities were started. Though "the Bridge" was incorporated, Bührer was apparently the only person attending to mundane business matters. As he was a meticulous person with the mind of an artisan, he could not cope with the picture card collection task, leading to stagnation of the office

work. Moreover, he became sick. The greatest blow to the movement was the breakout of World War I. Their activities, which started in 1911, lasted only for a few years.

According to one of the pamphlets published, in which a part of the grand plan of the Bridge is described, their activities included collection and classification of newspaper clippings, photos, films, admission tickets, various tickets, product labels, picture cards, wrapping papers, concert programs, stamps and others. The actual organization was too weak to carry out such a large volume of work. I recall a story about the Deutsches Museum established in 1903, a few years earlier than the Bridge, also in Munich. The museum, recognized as one of the best science museums in the world today, was established by Oskar von Miller, an engineer and businessman who initiated the electric industry in Germany. In "the Bridge" pamphlet, Saager indicates the organization should be organized by a person specialized in the field. The specialist he meant in case of "the Bridge" was a librarian, a person working at a museum, or a public officer. There was, however, no specialized organizer in "the Bridge". Ostwald was a scholar, Bührer, an artisan and Saager, a man with literary learnings. If von Miller had joined the team, they probably would have made a lasting impact. I would like to point

out here that cooperational work of various types of people is essential in order to accomplish a new project.

Though "the Bridge" did not last long, their ideas should be highly evaluated, not only for superb ideas described above which remain with us in the present, but especially for its international pacifist movement. Following the Vienna Conference after the Napoleonic wars, a pacifist movement became very active and international organizations were established in succession. Among them were the IIB by Otlet and others and the Esperanto movement. Internationaler Verband der Chemiker (International Union of Chemists) which was strongly proposed by Ostwald was also along with the movement. In addition, he had a plan to organize Internationales Institut für Chemie (International Institute of Chemistry). Though Solvay promised to support him to realize the plan, World War I upset the attempt[2)]. The Institute was supposed to serve as a library of chemistry, museum and information center. Ostwald, Otlet and Solvay were closely related with "the Bridge" movement and the IIB. Their activities were international, pacifist and cultural. When the League of Nations was formed after World War I, the International Institute of Intellectual Cooperation was set up as part of the organization in Paris. It is said the ideal of the international activities of Otlet and others are well reflected in the organization[3)]. This ideal was

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carried on in UNESCO which was established after World War II[4].

As mentioned earlier, Ostwald's long-standing question was systematization of intellectual work. Encounter with "the Bridge" movement and guidance from Bührer and the others encouraged him to write a book titled "Die chemische Literatur und die Organisation der Wissenschaft" (The chemical literature and the organization of science). Although the book is ostensibly about the organization of a bibliography of chemistry, the ideas shown are meant to be expanded to include literature in general. He discusses in the book a necessity of the decomposition of a book into knowledge units and the need for standardization, which is common with the ideas of Bührer's. There are also specific ideas of his own which are quite interesting and are worth reading carefully. His posture reflected in the book is noticeable. Only the best scientists are qualified to write textbooks and handbooks. As the founder of physical chemistry, he published a large volume of book titled "Lehrbuch der allgemeine Chemie" during the years of 1885 to 1888. There having been a rapid development in the field during the following 30 years, a more systematic volume was wanted. Ostwald together with Carl Drucker, his successor in Leipzig University, served as co-editor

and searched for authors (from the United Kingdom and Poland as well) to contribute to their new volume "Handbuch der allgemeine Chemie". Having completed the restructure work of physical chemistry and designating the most appropriate scientists to each them, he had another question to be solved i.e. what is the systematization of science? He contributed a chapter on the subject to be included in the first volume of the Handbuch. I would like to point out here that this was an important fact. As far as the records show, neither Ostwald's book nor Bührer/Saager's book and their activities was referred to or discussed in the field of library science in spite of the realization that in order to develop library science, there is a need to obtain help from specialists of different fields. The Bridge was not built even between the closest fields.

Here I must further comment on the influence on leading scholars of the Bridge. In the early stage of the Bridge movement, Friedrich Kuntze, Professor of Philosophy of Berlin University, contributed a paper to Kunstwart, a review published in Munich. The paper says the idea of systematization of intellectual work proposed by "the Bridge" has great importance and the principle of systematization could be included in the lectures at university[5)]. Kuntze wrote a book titled "Die Technik der

geistigen Arbeit"(The technique of intellectual work) in 1921, in which he pointed out the necessity of decomposition of a book by content and arrangement by DC, though there are both kinds of intellectual work, some suitable and some unsuitable for decomposition. According to him, arrangement using DC is one means. The importance of Bibliography, though he hardly uses the term, and techniques of intuitive tacit transmission of ideas from professors to students are discussed.

From somewhat lengthy talk on the historic episode, I would like to point out what we can learn in order to obtain a clue to future developments of library science in the 21st century.

To do so, we must forsee the 21st century, which is not very easy, based on the tendencies now seen.

Firstly, multipolarization now beginning to occur will be further progressed in the coming century, while centralization mainly in Europe and the U.S. has been the characteristic of the past.

Secondly, the way of looking at science is changing. The truth discovered by the scientist has been an absolute truth, and the system of the intellectual work established

by them was believed to be the one and only. Today such a belief is becoming questionable. Scientific knowledge, which may be a fact under certain circumstances, is not absolute but relative.

Thirdly, a new civilization called "information electronics civilization" will become dominant. The new civilization is at its beginning following the petroleum electric civilization which began early in the 20th century, the energy civilization since the end of the 18th century and the labor civilization since the dawn of history[6].

As knowledge and documents become more diverse and relative, to which a certain principle of systematization cannot be applied, an index by knowledge units will become critical. Kuntze, as referred earlier, says we need an eye of Zyklopen, a one-eyed giant of the Greek myths in order to index the whole work[7]. Education in the use and application of electronic facilities which are programmed with the results of information science for indexing will certainly become one of the most important curricula in future library science education.

As Kuntze indicated, there are knowledge areas which cannot be decomposed, and knowledge which is valuable only when it is kept as a whole. Library's long standing role has been classification work by catalogue or

bibliography. I believe it is necessary to analyze both microscopically and macroscopically for the purpose of classifying and systematizing knowledge. Both approaches, macro and micro, will supplement each other in order to achieve the systematization of intellectual work. The two major pillars of the library science education will be information science and documentation.

The Bridge, because of its failure, teaches us an important lesson, namely, that the bridge was not even built over to the nearest side. Kuntze cites "many scholars did not look back upon the results of their efforts at the most important time" (Mancher Gelehrte hat wohl die ingentis acervos der Früchte seines Fleißes bei solchen Gelegemheiten nicht oculo inretorto betrachtet.) As Ostwald said, it is a waste of energy if the results of efforts are left unknown. However, is it at all possible to solve the problem only by information science and documentation? I believe there should be two more courses. One us to teach knowledge of a field fairly thorougly. Furthermore one has to have an academic background based on classics. A broad knowledge of languages is also essential.

In short future library science education will be aimed at producing students of different abilities instead of uniformity though each one of them should have the same spirit of wanting to serve mankind.

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The tri-dimensional nature of information work

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The Tri-Dimensional Nature of Information Work

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Introduction

A Basic premise of this paper is that professional roles (in this case librarianship) are determined by the philosophy and systematized strains of thought that constitute a profession's theoretical foundation as sifted through the social needs and cultural circumstances from which a professional group derives its identity.

Librarianship, as a discipline and a profession, has remained for centuries a stable occupation. The history of librarianship in recent decades, however, tends to bear out that the library as a social institution has been remarkably uncertain and erratic in meting the demands of our time. It is no secret that the library profession is in considerable disarray, both theoretical and practical. The long-standing basic framework of shared understanding and commitment which has sustained librarianship for centuries is no longer adequate to cope with today's complex reality. The consequences of this state of affairs permeate all aspects of library practice, but are particularly felt in the areas of research, international librarianship and education.

Most developing countries are committed to the concept of planning library and information services as integral parts of their national development plans. This means that librarianship in those countries is confronted with the need to base planning on universal principles, for world- wide coherence and continuity, while at the same time to organize planning that is responsive to culturally diverse and changing circumstances.

The effort of advanced countries to help emerging countries to plan and establish national information systems, together with their increasing concern about improving library services for their own ethnic groups, has brought into focus the high degree of dependence of the library upon its circumambient culture. As a consequence, what has been termed the western library tradition and its view of the role of librarianship is being increasingly questioned. Along with the systematic analysis of library operations, and the search for cooperative answers, the age-long quest for principles and explanation of causation has acquired new impetus.

Concerns about how to incorporate new technology (such as automation), new kinds of services (such as attention to special groups), and new specialities (such as "information management" and information system analysis and design) have revived the issue of a "core" curriculum and made evident the lack of, and hence the need for, a well structured body of professional knowledge.

Pleas for a professional "philosophy" have been persistently made for several decades. In recent times, however, the discussions concerning the theoretical basis for librarianship have been caught up in the conceptual cyclone that surrounded the appearance of information science.

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Meanwhile, the overall environment of information is rapidly changing. Communication technologies are now being inexorably integrated, and this merger, or "telematics" as the Europeans call it, is creating new intellectual capabilities by virtue of the technologies assisting the human brain. Furthermore, the so-called information industry is growing at a vertiginous pace (in the United States alone, 1.64 million information professionals have been identified working in eight major "workfields" associated with information transfer or the generation of knowledge (Debons and King, 1980). New occupation titles are being created every day (approximately 1500 were identified by Debons and King, 1980) and the concept of information management is evolving around the world in both academic, job, professional and government contexts. Both industry and government are moving ahead, in an evolutionary and incremental fashion, with planning and implementing Information Resources Management programs, and although there is still no precise definition of what an information manager does, one sees the post being created and filled in many organizations.

Information-related thought and research is taking place in virtually all of the sciences, and as a result, a full diversity of attentions is brought to bear on the study and understanding of information content, form, processes and systems. However, most researchers do not focus on information per se, and there is a need for an approach that could be used to identify and synthesize the wide variety of ideas, theories and models about the phenomenon information across the sciences, an approach that would truly explain the observations made of information and, at the same time, preserve its integrity. The question remains, however, is librarianship able and willing to meet this challenge? And, on which grounds should it claim for itself such a responsibility?

Going back to fundamentals

Human societies, in order to progress and develop, must be able to put knowledge in storage for future use, and this need brought forth an occupation which is as old as man's capacity to communicate. The rise of this occupation of "keepers of the social record" was due to the convergence of three unique human attributes: the capacity to think and to communicate; the ability to invent artificial communication tools, and the capacity to create culture. It is therefore reasonable to assume that the "raison d'etre" of the occupation, which later became known as librarianship, rests on the equation established by these very same factors: man's cognitive and communicational processes, his communication technology and his supporting culture.

It could also be assumed that historically the evolution of librarianship has been determined by these three factors, and that the role of the discipline (its usefulness to society) is directly related to the librarian's ability to understand the complex and changeable nature of these elements and the maze of relationships among them.

Although these factors are equally determinant, they are not equally easy to understand. Human cognitive processes have remained in great measure a mystery and a matter of philosophical speculations. Human societies vary, and the notion of culture, itself, is subject to different interpretations. Thus, the more concrete and best understood of the three factors has been communication technology, which in part explains why the evolution of librarianship has paralleled so closely the type of technology predominantly available.

The foregoing historical sketch, however simplistic, might enable us to explore briefly the nature and evolution of librarianship, and reflect upon its current situation.

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Librarianship and Communication Technology

The strong relationship between what librarians have done in each epoch and the significance of the book as a necessity among occidental societies, seems to be
unquestionable and well documented in the literature. The influence of the physical characteristics of the printed record on the evolution of librarianship has also been amply discussed in the literature. For example, it has often been pointed out that the custodial aspect of the librarian's task ties him to a physical setting to a greater degree than other occupations, and that by virtue of this physical imperative a shift of emphasis takes place from the goals of librarianship per se into its functional aspects. Also, the point has often been made that restriction to a definite ecological area (the library and its surrounding community) brings about dependency and limitation of role, as well as a deep sense of loyalty towards an habitual clientele and a strong commitment to serve its needs.

Librarianship and reading

The relationship between librarianship and the intellectual characteristics of the printed medium are much more ambiguous. Although librarians see in the promotion of reading one of their major tasks, and for centuries have been dedicated to providing the "best" books to their users, they have paid scant attention to the processes involved in the act of reading itself.

The effects of literacy have received considerable attention from students of culture and cognition. However, the library profession, with few exceptions, has generally ignored the significance of this research. As a result, the profession's response to two of the most important issues of modern society, literacy and universal education, has been erratic. In an assessment of the intellectual history of American librarianship, Harris (1976) describes this reaction as a series of "frenetic crusades" followed by relapses into "a somnolent and ambivalent attention to the mechanics of their role as custodians of the printed record" (p.283). Librarians, generally, have remained prisoners of the psychological, emotional and intellectual conditioning of the world of print, and have been reluctant to re-evaluate their role in terms of the perspectives of the new media.

Clearly in those parts of the world where the process of passing from an oral tradition to a written one is still taking place, and where communication by word-of-mouth coexists on a large scale with the most sophisticated electronic media, these traditional attitudes are damaging and misleading. As we enter the so called information age, communication technologies are being inexorably integrated and this merger is creating new intellectual capabilities. As policy makers and planners all over the developing world engage in the difficult process of making choices among educational approaches and information strategies to serve development objectives, they need to hear from information specialists about the motivational and informational capacities of different media -- that is, each medium's respective characteristics and the effects each has on the individual, community and society.

Librarianship and the bibliographical system

Throughout the history of librarianship, bibliographic organization has remained a constant concern and a historical unity. Over the centuries librarians have been intensely dedicated to the task of systematizing the records of human experience for retrieval and use. In a recent article, Asheim (1982) describes in one sentence what has probably been librarianship's most cherished goal -- "to provide the largest possible store so that all needed items are available for a potential user" (p. 220).

The concept of "total store" has embedded in it a host of assumptions about information/knowledge which have been associated with positivism or positivistic science. In essence the "total store" idea rests on one fundamental assumption -- that reality is discoverable and predictable. Information, it is believed, can both describe and predict reality and, thus, it is a valuable and useful tool that allows people , as well as nations, to cope more effectively. As Dervin (1976) says:

> If we assume that we are discovering reality, then the acquisition of more and more information about reality makes a better fit. (p.327)

On the other hand, the librarian's traditional devotion to individual service and individual response demands that he be able to anticipate user's demands. This leads to the librarian's role of gatekeeper, or intermediary, manipulating the flow of information from total store to focus on that part of it that meets the user's needs insofar as the librarian understands the expression of those needs. This role perception ignores a principle derived from experience, namely, that cataloging and reference work, indexing and query, are mirror images of each other (Lancaster, 1968). Furthermore, the very fact that anticipation of user's needs is necessary reveals, in itself, the failure of the assumptions that underlie the "total store" concept, and constitutes a vivid example of the "professional schizophrenia" that makes the librarian, to paraphrase Dervin (1976), at the same time and in the same breath both an information positivist and an information relativist.

For developing countries the consequences of the absolutist approach to bibliographic systematization have been very damaging. Too often the results have been libraries which are in effect stockpiles and cemeteries of irrelevant materials, while the inventory of current local bibliographic production and vital statistics is neglected. Furthermore, because international programs encourage developing countries to gain access to international sources as a way of resolving their own information problems, local information systems are being designed with this objective in mind, and national requirements are relegated to a secondary position. As a result, information systems in Latin America tend to reinforce the relative advantage that the transnational community has as information sources/users and to favor increased technological dependence by the region on other regions.

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Librarianship and Culture

Librarianship, as a social instrument and a service to society, should follow a process of institutionalization influenced by the organizational structure and value system of its supporting culture. However, most of the library development that has taken place in recent times has stemmed from what may be termed the Anglo-Saxon tradition, and the patterns that have resulted have been propagated, consciously or unconsciously, by western librarians traveling abroad on consultant missions, and through library literature much of which has been produced in the United States.

The major lines of development that have characterized the growth of North American librarianship reveal it as a part of the particular process of institutionalization that characterizes American culture and the American psyche. Among the cultural elements that have determined the socialization of librarianship in the United States, two are of particular importance for our present concern: the tradition of local government and the principle of participatory democracy.

In contrast to Latin American countries where the development of libraries is centrally planned and government supported, the establishment and support of libraries in the United States have been mostly a local undertaking, originally through support by private groups, then by local governments, especially for public libraries. On the other hand, because the political structure of the United States aims at participatory democracy, the social function of the library rests on the notion that information and democracy, even participatory democracy, are interdependent ideas. Indeed, the concept of a library directly linked to the democratic ideals of equal opportunity and freedom of expression is an article of faith with American librarians.

From the convergence of these two principles the role of the librarian in the United States has emerged as that of mediator among co-existing interests, bent on providing to his community a service based on the assessment of perceived or felt needs. Students of library history have pointed out that the mediator role has often resulted in the domination of influential groups (Harris, 1976), and that the principle of democratic localism has in the long- run made the American library an elitist institution (Shera, 1972). Illich (1969/1979) points out that the nations of the West are packaging their services to contain their views of the world. He also contends that industrialized societies provide such packages for the consumption of their citizens, and that "the more the citizen is trained in the consumption of packaged goods and services, the less effective he seems to become in shaping his environment" (p. 437). What is true of citizens is also true of nations and, consequently, Illich defines underdevelopment as the "surrender of social consciousness to pre-packaged solutions" (p. 440).

The worldview of developing countries is embodied in the ideas and values underlying their own concept of development, and those ideas and values stress social justice and independence. Too often, however, the struggle for independence has been outside the direct experience of the masses. Independence has been good news, and true participatory democracy is an ideal to be striven for, but most people in the Third World have been spectators rather than participants in the process of social change. The principle of free participation has no meaning in contexts where most people are unable to participate. At issue here is the question: Can librarianship become a change agent in the process of development and if so, how? The first part of the question addresses the issue of the nature of change in society, the second part is concerned with the nature of information and its relationship to human and social development.

The tri-dimensional reality of librarianship

The time has come to sum up some of the conclusions of this paper and make a few cautious projections in relation to future developments of librarianship in general and their implications for library research and library education.

The preceeding analysis has shown that librarianship, as a world-wide profession, has traditionally tended to parallel closely the prevailing communication technology while adhering to uncritical and idealized versions of library purposes which are essentially mired in the absolutist metaphysics of past epochs.

From the old philosophy, librarianship has derived both an attitude and an impossible dream as well as a distinct basic core knowledge and methodology characterized by a deterministic-positivistic approach to collection building and bibliographic organization, and a relativistic attitude toward retrieval and use. Because of this objective- subjective dualism, the social role perception, and hence the institutionalization process of librarianship, have been marked by a clear dissociation between principles and goals, and their translation into action. Thus, although for the past hundred years there has been a progressive involvement of the library in the affairs of the community, the profession's response to societal developments has been generally erratic and reactionary rather than logical and self-determined. The contradiction between what librarians believe they are doing and what they are actually doing is evident in contemporary library patterns which aim at abstract principles and unreal notions of society while, at the same time, adhering to a concept of service stressing localism, consensus, accommodation and strict neutrality between individual users' needs.

In the developing countries, the uncritical acceptance of those patterns has worsened rather than resolved the information impasse. In effect, following the role cues embedded in the imported library patterns, role definition in Latin America has been consistently conservative and elitist, and is characterized by a lack of understanding of the needs, hopes and aspirations of the underpriviledged classes.

At the outset of this century, librarianship found itself lagging behind the unprecedented scientific and technological advances and unable to cope effectively with the rapid social change and the problems of information explosion and "information overload." It would be reasonable to assume, therefore, that documentation, information retrieval, and information science, emerged to fill that void, and represent attempts to adjust to new conditions. In sum, both librarianship and information science are entering the post industrial age without having been able yet to revaluate their mission and to generally establish a sound theoretical foundation to support their claim to professionalism. Shera and Cleveland (1977) suggest that such foundation must be structured around some consistent notions of the phenomenon of information, and this reality dictates the consideration of human nature and human cognitive processes. The evolution of the discipline which purports to make all human knowledge available has been tied up to communication technology for too long, and if it is to survive in all its integrity and usefulness, it can no longer abnegate its responsibility for addressing the philosophical and cultural issues that underlie its very existence.

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A Useful Framework for Reconceptualization

A major conclusion of this study is that the tri- dimensional concept of the reality of librarianship is a useful perspective in the achievement of professional integration. In effect, the tri-dimensional conception provides an adequate and flexible framework for the development of theory, research and curriculum.

This assumption is based on the following premises: Librarianship since the most remote antiquity has viewed its role consistently, in terms of the preservation and organization of the record of human experience for future use, and the library system has evolved to operate as a collective memory, mirroring as much as possible the human intellect in the sort of operations the human mind carries out: storing, classifying and retrieving. This role perception is the uninterrupted thread throughout the various transformations and reformulations that the profession has undergone in response to changes in social situations and in communication technology. This continuum allows one to situate the discipline within the broader context of human communication, and to identify the areas of activity within which the modern librarian operates, since it places the essence of librarianship, its raison d'etre and role justification at the intersection of three fundamental factors which, in the context of this paper, have been defined as: man's natural communication system, the communication tools he has created and the library supporting culture.

The integrity of librarianship, both as a discipline and as a profession, depends on maintaining its relationship with these three factors in perfect balance since an inclination towards one at the expense of the other two results in role distortion.

If one believes that the occupation of the "keepers of the records of human experience," one of man's oldest occupations, is now reaching maturity, it becomes clear that what is commonly known as "archives," "librarianship," "documentation," "informatics," "information science," and the more recent "information management," represent stages of an evolutionary process, and should be viewed as manifestations of the same intellectual approach or discipline, and/or aspects of the same basic social function.

The conceptual dimension of Librarianship

The relation of librarianship with human cognition defines the conceptual reality or dimension of librarianship. Thus, this dimension is essentially concerned with the problem of how man knows, both as an individual and as a social being. In its broader scope, therefore, the conceptual dimension addresses the laws of human development. Librarianship, in this dimension moves in the realm of pure thought, in the areas of philosophy, history and science in its most ample definition for, in the words of Ortega y Gasset, "in the last analysis science is nothing but the effort we make to understand anything" (1931, p. 23).

More concretely, the goal of librarianship, in its conceptual dimension, is the development of an approach that could be used to identify and synthesize the wide variety of ideas, theories and models about the phenomenon information across the various sciences and disciplines, an approach that would truly explain the observations made of information and, at the same time, preserve its integrity. Thus, in this dimension, Kaplan is probably right when he suggests that librarianship is a metascience which is primarily concerned with problems of structure, order and form, and its main task becomes to develop the conceptual tools.

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This area studies librarianship as a discipline, its development, values, beliefs, purposes, underlying knowledge and inquiry methodology. In short, it is concerned with the identity and integrity of the profession and, consequently, with the attitudes of librarians toward their work; their vision and sense of values.

The Contextual Dimension of Librarianship

The relationship of librarianship with its supporting culture determines another reality of librarianship, the contextual dimension. This dimension is concerned with the problem of social development in the most ample sense of the term. This means that librarianship must develop an appreciation of the role of information in that part of society in which it operates, which in turn requires an understanding of the "vital perspective" of its supporting culture (in the language of developers, the development style of a country).

In the contextual dimension, librarianship becomes a social science which must develop a vision of the society in which it operates by incorporating perspectives from other social sciences: development theory, innovation theory, political sciences, political economy, and so on. The goal of librarianship in this dimension is to develop the conceptual tools that will enable the librarian to assess and predict individual information-gathering behavior, in terms of the understanding of intelligent human action developed in the conceptual dimension.

This area studies the institutionalization of librarianship. That is, it studies the way in which librarianship determines the nature of the social need it must meet, and integrates theory and context to package services to meet that social need.

The functional dimension of Librarianship

The relationship of librarianship with communication technology determines the third reality of librarianship,
its functional dimension. In this dimension librarianship addresses the way in which what is known is represented in and recoverable from the various media and communication technologies invented by man. In this dimension librarianship becomes an applied science, a kind of "information engineering," and applies itself to the development of the intellectual tools required for the organization and retrieval of information and the design of user-systems, on the basis of the theory developed in the conceptual and contextual dimensions. On this level the "good" that librarianship is to deliver to society becomes a mandate to develop effective methods and technique to organize, control, store and retrieve information.

Conclusions

From this analysis it was concluded that librarianship, one of man's oldest occupations, has traditionally tended to parallel closely the prevailing communication technology and has been unable to develop strong theoretical foundations based on an understanding of human nature and human thought processes. Consequently, it was suggested that the development of such foundations constitutes the most urgent task that confronts librarianship as it enters the so-called "information age." A tri-dimensional framework was suggested for the development of theory, research and curriculum.

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RESEARCH IN LIBRARY & INFORMATION SCIENCE IN INDIA: AN OVERVIEW

by
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1 INTRODUCTION

Historically speaking, Library & Information Science (L&IS) does not have a long tradition of research scholarship or organized research activity. This, however, does not mean that individual librarians in the past have not experimented. In fact, throughout the history of libraries in various countries, there has been a great deal of experimentation, innovation and ingenuity in the solving of library problems. The last quarter of the ninteenth century, and the early years of the present century were certainly a period of intense enthusiasm for new methods, techniques and gadgets particularly in the United States and the United Kingdom. This enthusiasm was associated with the exchange of ideas and information which had been made possible by the establishment of the professional associations - the American Library Association in 1876 and the British Library Association in 1877. An examination of the early conference proceedings shows that librarians were prepared to listen to vast number of papers about each other's methods, intermingled with equally weighty papers of a literary or bibliographical character.

Pioneers like Dewey, Cutter and Panizzi were thinkers and innovators par excellence. Apart from his classification Dewey founded the Library Journal, the library school at Columbia, and in his enthusiasm for simpler spellings, even tinkered with his own name. Cutter was a librarian who, with great imagination, brought systematization into various library practices and

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procedures. He can rightly be called as a genius for being the first to develop rules in the field of subject cataloguing. Panizzi was far ahead of his times in developing cataloguing rules and designing the British Musuem Library. A librarian in New England introduced a sloping shelf and shelved his books in reverse order- from bottom to top and from right to left. James Duff Brown's introduction of open access in the lending library at Clerkenwell in England in 1894 led to a battle with the supporters of the closed access, the bitterness of which certainly amazes us now. During this period too the great debate on the relative merits of classified and dictionary cataloguing began. Much attention was given to the perfecting of gadgets for useful purposes: F.G. Burgoyne's fascinating little book Library Construction: architecture, fittings and furniture, published as early as 1897, contains detailed descriptions, with drawings, for available devices for adjusting shelves, and so on.

2 RESEARCH IN INDIA

In India S.R. Ranganathan, who joined the library profession during the mid 1920's, can rightly be called a genius and an innovator. He made seminal contributions in almost all branches of library and information science, particularly in library classification, subject indexing, documentation and library organization. During his life time Ranganathan created the entire library world for India and influenced librarianship all over the world. Prior to Ranganathan, librarianship in this country had been considered as a craft involving clerical operations and housekeeping for a collection of books and other reading materials. Ranganathan changed this first by engaging in solo research, for 25 years, and then by organizing team research during the next 25 years.

A mathematician by early training and temperament, a scientist of exuberent intellectual acumen deeply rooted in the lore of Indian thought and culture, and academician and teacher par excellence, Ranganathan (1895-1972) can rightly be counted amongst the doyen of modern scientific librarianship not only in India but in the world. During the five decades of his professional career, he worked as a Karamyogi in the

true sense of the term and made original and seminal contributions through his writings which number about 60 books, development plans, etc. and a few thousand research publications in the form of articles, committee reports, technical reports, lectures, etc. and through correspondence with his students and others. Some of his books such as Five Laws of Library Science (1st ed. 1931; 2nd ed. 1957) and Prolegomena to Library Classification (1st ed. 1937; 2nd ed. 1957 and 3rd ed. 1967) can rightly be called 'classics'.

2.1 Ranganathan's Major Contributions: A Resume

Since there is hardly any aspect of library science which escaped the attention of Ranganathan it is difficult, if not impossible, to make a comprehensive assessment of his work in a rather short paper. Some of his thought provoking contributions are however outlined in the following sections:

2.11 Ranganathan and the Five Laws

As mentioned earlier, the most seminal contribution of Ranganathan is summarized in his Five Laws of Library Science, viz. Books are for Use; Every Reader His/Her Book; Every Book its Reader; Save the Time of the Reader; and, Library is a Growing Organism.

The stumulus for the formulation of these laws, as Ranganathan himself explained, was the unusual experience he gained while visiting more than a hundred U.K. Libraries in 1925 which were at varying stages of development. There was no evidence of an overall view of development in these libraries. Ranganathan could only see an aggregate of divorse practices without an integral relation. It all appeared to be a matter of trial and error, or a matter of rule-of-thumb, and severely empirical. This made him search for a common thread in the various developments and practices. The result was the formulation of the

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Five Laws of Library Science.

The Five Laws provided him with a conceptual framework for developing various normative principles, canons, techniques, practices, etc. essential for organizing libraries and their services along scientific lines. Also, the new implications of library science - the intensification and the growth of a variety of information services which are needed in a changing social context, as well as the giving way of the theoretical framework of library science to a more general framework of information science - can easily be derived from the Five Laws by changing the two basic parameters: 'Books' to 'Information', and 'Reader' to 'User'.

Berwick Sayers has remarked that the "Five Laws are a work of great simplicity which conceal depths and yet reveal what may be called the spiritual but intensely practical springs of his (Ranganathan's) activity"(1). According to B.I. Palmer, one of Ranganathan's admirers in the U.K. the laws are "succinct statements of reasons of our profession".

2.12 Library Classification

The inner urge to organize the Madras University Library along scientific lines led Ranganathan not only to enunciate the Five Laws but also to develop theoretically sound systems, with sound practical implications, for the organization of the document collection and services to the readers. As early as 1930 his dissatisfaction with the inability of the Decimal Classification, then widely in use, to accommodate newly emerging subjects led him to develop the Colon Classification, the first edition of which was published in 1931. It has already progressed through six editions, the last one published in 1960. Concepts such as Fundamental Categories, Facets, Analytico-Synthetic Scheme vs. Enumerative

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Scheme, Postulational Approach, Planes of Work, APUPA Pattern, Canons of Classification and several others developed by him and later explained in the three editions of Prolegomena to Library Classification have revolutionized the whole thinking on library classification not only in India but all over the world. His ideas and concepts undoubtedly provide challenging food for thought to researchers, classificationists and other library and information scientists, and should continue to do so for years to come. Commenting upon Ranganathan's contribution, Shera and Perry observed:

> "... As was suggested above, facet analysis derives from Ranganathan's investigations into the way in which knowledge grows and in his work, for the first time, librarianship as the science of the management of knowledge merges with epistemology. This distinguished Indian philosopher found librarianship little more than a bundle of techniques, a rather simple technology and he and his followers, have raised it to an intellectual discipline in its own right. Thus, he had laid the theoretical foundations upon which others can build".(2)

2.13 Library Cataloguing and Subject Indexing:

In cataloguing, Ranganathan experimented with the comparative usefulness of a classified catalogue and a dictionary catalogue, and found the former to have various inherent advantages over the latter. Actually, he remained a great champion of the classified form of catalogue throughout his professional career. His Classified Catalogue Code, first published in 1935 and which has already progressed through five editions, is still the only comprehensive code for preparing a classified catalogue. His Normative Principles combined with the Canons of Cataloguing provide a scientific framework for cataloguing rules and for evaluation of cataloguing practices.

His concept of Chain Procedure for subject indexing

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is another outstanding contribution wherein he brought out the symbiotic relationship between classification and cataloguing. In 1950, it was used on a large scale in the British National Bibliography and continued in use there until the early 1970s. In a review of the B.N.B. Vickery remarked:

> "The effect of this method is that the whole chain of classes is displayed in the index, and even if the user looks up an entry not corresponding exactly to the subject he seeks, he is led into the right region of classification. The "feature word" he is after can then quickly catch his eyes. The second useful aspect of this procedure is that it displays relations not displayed by the Classified List itself". (3)

A good deal of developmental research is being carried out in India and abroad on the refinement of the Chain Procedure. In 1963, E.J. Coates described Chain Procedure as an "alternative to the arbitrarily limited premutation of index components". The development of PRESIS and POPSI can rightly be considered as offshoots of Chain Procedure.

2.14 Other contributions:

His other contributions in the theory and practice of areas such as Book Selection, Reference Service, Library Administration and Management, Buildings, Furniture and Equipment, Professional Education and Organization of Library and Information systems are really unique and commendable.

3 PERIOD OF ORGANIZED RESEARCH

While the contribution made by Ranganathan and a few other practioners would always find prominent place in library history, organized research activity in the country in this field

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has progressed at a rather slow pace. Much progress has been made during the past 8-10 years. Without going into an analytical study of the various reasons for this it would be pertinent to mention that the past history of librarianship in India (as in several other countries in the East) is that of 'having libraries' with little emphasis on library service in the modern sense. The recognition of the role libraries could play in the educational, scientific, industrial and socio-economic development of the country began to receive acceptance only as late as 1940s.

After independence in 1947, the stimulus for the growth and development of libraries, documentation/information centres and networks came from progress in and extension of education, scientific research, industrialization and programmes of socio-economic development in the country. To highlight some of the achievements in the field it may be mentioned that the country now has (1) four national libraries, viz. the National Library, Calcutta, the National Science Library, and National Medical Library at Delhi, and the Indian Agricultural Research Institute Library at Delhi which can also be considered as the national agricultural library; (2) good libraries in colleges, universities, institutions of higher learning and laboratories, research institutions, government ministries/departments; (3) bibliographic control of Indian publications with the publication of the Indian National Bibliography since 1958; (4) documentation services at the national level provided by INSDOC and DESIDOC; (5) public library legislation in five states, viz. Tamil Nadu, Andhra Pradesh, Karnataka, Maharashtra and West Bengal; (6) education and research facilities in about 55 library schools, and (7) library associations at the national and state levels.

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In addition, the Government of India, Department of Science and Technology has already started the implementation of its plan for National Information System in Science and Technology (NISSAT) and four Sectoral Centres- Leather, Drugs and Pharmaceuticals, Food Technology, and Machine Tools-have been in operation since 1977. A proposal for establishing a national information system in social sciences (NISS) is already under the active consideration of the ICSSR, New Delhi. The UGC has also established Information Service Centres in Science and Technology and Social Sciences for teachers and scientists working in colleges and universities in the country. Several institutions such as Bhabha Atomic Research Centre (BARC) and Indian Council of Agricultural Research (ICAR) are already functioning as national innute centres for the international data bases, INIS and AGRIS, respectively.

Collaboration with several other global information systems and programmes such as UNISIST, POPINS and MEDLARS is being developed so as to have all possible access to the information resources at the international level.

3.1 Developments in L&IS Education

The need for professionally qualified personnel to manage, develop and provide services in an efficient and effective manner has been well recognized with the result that L&IS is a well recognized discipline of study and research at the post-graduate level today in about 55 universities in the country. All these 55 universities conduct the one-year course at the post-graduate level leading to a Bachelor's degree in Library Science or Library and Information Science. About 25 of these have a further one-year course for a Master's degree in Library Science or Library & Information Science. About 15 universities enrol students for Ph.D. degree and one University, viz. the University of Delhi conducts the M.Phil. programme in the country. In addition, two institutions, viz. Documentation Research and Training Centre Bangalore and INSDOC, New Delhi conduct training programmes leading to Associateship in Documentation/Information Science.

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3.2 Developments in the Research Activity

The research activities in the country can be broadly classified into two categories, (i) research conducted in library schools leading to the award of M.Phil and Ph.D. degrees or fellowships awarded by the professional associations; and (ii) research not leading to the award of any formal degree, carried out by individual researchers, research teams in library schools, libraries, documentation centres, etc.

In addition, in almost all the library schools conducting the Master's degree or Associateship courses students are required to submit a Project Report or a dissertation on an approved topic and carried out under the supervision of a faculty member as part of the requirement to complete the Master's degree or Associateship programme. The total number of such Project Reports or Dissertations submitted every year is around 200.

3.21 Nature of the Research Activity

3.211 Master's Degree/Associateship Project Reports or Dissertations.

Unfortunately no comprehensive data are available at present about the various research projects or dissertations completed for the fulfilment of Master's Degree and /or Associateship programmes in the country. Using the input for the International Information Systems of Research in Documentation (ISORID), it was found that during 1968-76, 115 projects were completed or in progress in different organisations or institutions. It was noted that 92% of the research activity reported emanated from educational institutions such as universities, DRTC and INSDOC.

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The remaining 8% was reported from professional associations, information centres and libraries. On the basis of the details about these projects it was found that:

(1) the dominant areas of research were (i) information work- especially classification, indexing, and indexing languages, and (ii) descriptive and evaluative studies on organizations;

(2) some of the studies on secondary documents included comparison of major abstracting periodicals in different disciplines, citation analysis, union catalogues and their computerization; and

(3) not much attention had been paid to information services, user studies and training in particular.

3.212 M.Phil dissertations

The total number of [redacted] dissertations submitted in the University of Delhi during 1980-85 for completion of the M.Phil degree programme was 18.

The subject analysis of these dissertations is as follows:

Administrative organization	- 1
Continuing Education	- 1
Information system	- 1
Library service	- 1
Professional education	- 2
Professional staff	- 2
School libraries	- 1
Staffing pattern	- 1
Use of periodicals	- 2
User's studies	- 4
Thesaurus construction	- 2
Total	-18

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3.213 Ph.D. Theses

The first Ph.D. degree in the country was awarded in 1957 by the University of Delhi on the topic 'Facet Analysis and Depth Classification in Agriculture' done under the supervision of S.R. Ranganathan. After that almost for two decades there were hardly any Ph.D. degrees excepting that a few candidates obtained the doctorate degrees from other university departments by selecting Library Science topics such as Public Library Legislation from a Department of Political Science and History of Libraries in India from a Department of History.

Though a complete list of all the theses approved for the Ph.D. degree in the country during the past 8-10 years is not yet available it is estimated that their number would be more than 50. A broad subject analysis of the theses about which information could be gathered is as follows:

Classification	- 7
-Analytico-synthetic Classification Scheme	
-Dewey Decimal Classification scheme	
-Facet Analysis	
Cataloguing	- 2
Children's literature	- 2
History of libraries	- 2
Information retrieval and subject indexing	- 5
Information services (including Reference service)	- 7
Information sources	- 2
Library Movement & Organization	- 7
Library automation	- 1
Library buildings	- 1
Maintenance & Preservation of collection	- 2

Manuscripts	- 1
Manpower Requirements & Planning	- 1
Periodical publications	- 1
Reading habits	- 1
Special libraries	- 1
Universe of subjects	- 1
University libraries	- 4
Use of information	- 2
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3.3 Other Research Projects

In addition to the research mentioned above research work on special projects is done by teachers, practising librarians and others in some of the library schools, documentation centres, libraries and research institutions. Unfortunately, again there is no comprehensive listing of these research projects available at present.

It would be relevant to mention here that during the past 8-10 years funding agencies such as University Grants Commission (UGC), Indian Council of Social Science & Research (ICSSR), Department of Science & Technology (DST), Council of Scientific & Industrial Research (CSIR) and a few others have sponsored various research projects in areas of their interest and/or provided financial support for them. For example, the ICSSR has funded 23 research projects in different areas of Social Science such as preparation of bibliographies, indexes, social science encyclopaedias, study of information needs of social scientists, Government publications, etc.

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Information about these research projects as well as those for award of degrees are often reported in various professional journals in the country such as (i) IASLIC Bulletin; (ii) ILA Bulletin; (iii) Journal of Library & Information Science (Department of Library & Information Science, University of Delhi); (iv) Herald of Library Science; (v) Library Science with a slant to Documentation (DRTC); (vi) Annals of Library Science & Documentation (INSDOC), and the News letters published by different professional associations.

4 MAIN FACTORS ACCOUNTING FOR LACK OF RESEARCH ACTIVITY

As mentioned earlier, though the first Ph.D. degree was awarded by the University of Delhi as early as 1957, development of research work has been rather slow. Because of the vast expansion in libraries and documentation centres during the past 20 years or so job opportunities greatly improved and people with good academic and professional qualifications were in a position to find good employment without facing much competition. Research qualifications were not considered essential for these jobs. Other factors which account for the lack of research activity in library schools include: (i) the small size of the teaching faculty which has to carry a heavy workload of teaching; (ii) lack of research qualifications and experience by the teaching faculty and practising librarians; (iii) lack of financial support in the form of research fellowships and scholarships; (iv) lack of proper library facilities; (v) non-availability of the essential data from libraries, parent organizations, etc.; and (vi) non-availability of research supervisors for topics involving inter-disciplinary research.(4)

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5 NEED FOR VIGOROUS RESEARCH ACTIVITY

Some of the factors emphasizing the need for vigorous research activity in the country include: (i) increasing emphasis on research qualifications for different senior level positions in libraries, information centres, and documentation centres; (ii) gradual recognition of the role of libraries and information in programmes of socio-economic development, industrial growth, R & D activity, etc.; (iii) increasing need to develop and provide computer-based information services to meet the varied and complex information requirements of users; (iv) need to develop well- organized information systems at the national, state and regional levels; (v) need to develop and utilize information technology; and (vi) need to develop inter-disciplinary research with areas such as linguistics, mathematics, sociology, psychology and computer science.(5)

6 SUGGESTED AREAS OF RESEARCH

In view of the need for vigorous research activity emphasized earlier, some of the areas requiring research work are as follows: (i) User studies: Information requirements of the users in different subject areas, literature use, library use patterns, user training; (ii) subject indexing: terminology, thesauri construction and maintenance, etc.; (iii) Classification and cataloguing: special classification schemes, cataloguing of manuscripts, books in different languages, non-book materials, etc.; (iv) Information systems and services: developing information systems, computer-based information services, etc.; (v) management of libraries and information systems; (vi) automation in libraries and information systems; (vii) education and research; (viii) inter-disciplinary studies in library and information systems and services; and (ix) library buildings and equipment.

7 CONCLUSION

Since India has already built up a considerable infrastructure of library and information services and of library and information science education during the past 15-20 years, the need for vigorous research activity hardly need be emphasized. It is hoped that with financial support and other facilities being provided by universities and other funding agencies such as DST, ICSSR, CSIR, the pace of research activity in the country will be made faster in future. Vigorous activity is not only essential but also urgent; as has been rightly said: 'Research produces knowledge, knowledge is needed for understanding, and understanding combined with skill leads to effective action'.

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